

Defining “Emptiness”

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What is the “emptiness” (“sunya”) that Buddha attained? This article attempts to formally define “emptiness” using tools of modern analytic philosophy. As a background overview, let us briefly look over how Buddha’s enlightenment has been interpreted by Theravada Buddhism and Mahayana Buddhism.

Emptiness is the Moon, Dependent Origination is the Finger

After the death of Buddha, Buddhism was divided into two major schools - Theravada Buddhism and Mahayana Buddhism. Theravada Buddhism describes Buddha’s enlightenment by the concept of “dependent origination”. In short, dependent origination means “all existence consist of interdependence”. “Dependent origination” is based on the idea of “relation generates existence”, which is opposite of the Western notion of “existence is what generates relation”. Buddha blew apart the idea that “relation is generated from existence” which is the hypothesis of Judaism, Christianity and Brahmanism. Relevance of Buddha’s idea was validated later by modern mathematics and physics. It’s because modern mathematics, physics and philosophy validate “no determinacy of existence” after success of incompleteness theorem in mathematics or after the success of quantum physics in the world of physics.

There’s no doubt that Buddha attained “dependent origination” under the Bodhi Tree. However his enlightenment was “emptiness” and not “dependent origination”. “Dependent origination” is the only principle to be

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used in describing emptiness. Buddha's teaching was "Do not look at the one pointing at the moon, but look at the moon". "Dependent origination" is the "pointing finger" in this sense. Buddha did not talk about emptiness itself. 2600 years ago, it was probably too difficult to address emptiness without modern tools of philosophy to people without education. Instead, Buddha preached "dependent origination" which is the philosophy to experience emptiness. Because of this, there are even some teachings which mixed emptiness and "dependent origination", or there are teaching to advocate that people can attain enlightenment as long as they understand "dependent origination" therefore meditation training is not necessary. However the idea of "dependent origination" is not emptiness itself, and understanding of "dependent origination" doesn't mean that you understand emptiness.

The emptiness discovered by Mahayana Buddhism was "abundant existence"

Mahayana Buddhism produced many genius leaders. The most famous of these are Nagarjuna of Indian Buddhism and Tsong Kha Pa of Esoteric Tibetan Buddhism. These great leaders preached and defined emptiness and enlightenment based on their achievement of transcendence and they spread Mahayana Buddhism. Given the number of Buddhists, it's reasonable to say Buddhism became successful after the development of Mahayana Buddhism.

Mahayana Buddhism bloomed in China after it was introduced in the country and Zhi-yi was one of the contributors. The philosophy of emptiness became rigorously sophisticated in China but surprisingly it's not well-recognized today. The development of Mahayana Buddhism should be acknowledged more in Buddhism history.

Mahayana Buddhism rigorously pursued emptiness that Buddha preached, and it discovered that the emptiness was not "nonexistence" but "existence". Mahayana Buddhism discovered that the emptiness means "abundant existence" as it fills the whole universe. The emptiness is to see the whole universe by focusing one existence, and not to see non-existence by focusing on one existence.

Definition of emptiness by formal thinking method from the West

Now how can we formally define Buddha's "abundant existence" of emptiness, which is the world of enlightenment that the whole universe can be seen from looking at one existence? The objective of this article is to attempt to define the emptiness.

It had been difficult for Westerners to accurately understand the concept of emptiness because mindset in the East is informal while the one in the West is formal. However now in 21st century, there is a well-systematized formal thinking methodology in the West and that is called Modern Analytic Philosophy. Emptiness can be formally defined by employing Modern Analytic Philosophy so that it assists Westerners with understanding this concept. Now let's begin to define "emptiness" of Buddha with Modern Analytic Philosophy.

Replacing the concept of the universe and existence with Partial Function

Partial Function means "function of division" in short. In Partial Function, defining one part enables its complementary set, the other parts which is not defined, to be defined as well.

For example, defining even numbers, which is a partial function, among the natural numbers also defines all the other natural number which are odd numbers. Here is another example. Defining "dog" divides the universe into dog and non-dog. If you can perfectly define what is a dog, you also can define the whole non-dog universe.

Furthermore, not only does it define concepts, Partial Function also defines physical existence. (Here we call "concepts" in physical space as "existence".) In the case of defining an existence of a certain individual, first it divides the universe between the individual and the rest of existence. Then, if the individual is perfectly defined, this also defines the whole universe excluding this particular individual. This is the concept and definition of existence in Partial Function of Analytic Philosophy.

When comparing concept and existence to Partial Function as stated above, we see the order of the partial functions according to the amount of information a concept or an existence contains. When there is less

information it means that a concept or an existence is represented by less information and the less information it represents the higher level of abstraction becomes. The partial function with less information is Superior Partial Function and the information with more information is Inferior Partial Function.

For example in comparing the concepts of dog and animal, “animal” has less information and “dog” has more information. Therefore, the level of abstraction is higher in “animal” than “dog” and “animal” is the superior partial function of “dog”. There is also an order relation. By contrast, there are times order isn’t generated among partial functions. For example considering the concept of dog and cat, we cannot tell which concept contains more information. Therefore order in such cases cannot be determined.

The Universe is Subsumption Partial Ordered Set in Set Theory.

Now we’ll employ a mathematics theory called set theory. When the word of “set” is used, the order of each element in the set doesn’t carry a meaning. However, when it’s called “ordered set”, each element in the set carries meaning. Traditionally set is notated as $\{ \}$ and ordered set is noted as $\langle \rangle$ and it means order has a meaning to it. $\langle 1,2,3,4 \rangle$ is a set order.

Let’s define the universe as a set of concept and existence. Then we’ll employ the amount of information in the concept and existence for order relation in order set.

Previously I described as follows: *In comparison of concepts of dog and animal, “animal” has less information and “dog” has more information. Therefore level of abstraction is higher in “animal” than “dog” and “animal” is superior partial function of “dog” and there is an order relation.*

Such relation of superiority and inferiority is called subsumption order. Subsume means to arrange elements according to the amount of information each element carries. The element with less information subsumes the element with more information. In this sense “animal” subsumes “dog”. In this manner, the set which two arbitrary elements invariably set an order is called subsumption orderd set.

On the other hand, as with the concept of dog and cat, a relation

which can never be put in order by amount of information is called subsumption partial order. So, a set always cannot be put in order with the arbitrary two elements is called subsumption partial ordered set

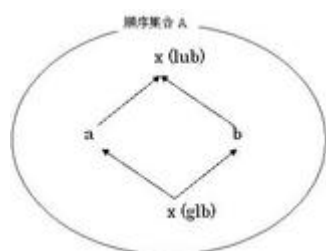
Concepts and existence in the universe include concepts such as “dog” and “cat” that cannot be put in order so that the arbitrary two elements cannot set up an order. Therefore all the concepts and existence can be defined as subsumption partial ordered set.

Universe is Subsumption Partial Ordered Set Lattice When Defined by Lattice Theory

In order to define the universe more accurately we will employ another mathematics theory named lattice. First I’ll describe what is LUB (least upper bound) and GLB (greatest lower bound) to help you understand lattice.

Element in common and superior to two arbitrary elements is called upper bound. Within upper bound, the element most inferior is called least upper bound (LUB). For example, there is the partial order set of <dog, cat, animal>. Comparing the amount of information each element carries, two arbitrary elements are “dog” and “cat” and their common superior concept is “animal”. Therefore “animal” is upper bound and LUB (least upper bound).

On the other hand, the element in common and inferior of two arbitrary elements is called lower bound. Within lower bound, the element most superior is called greatest upper bound (GLB). For example given the ordered set of <poodle, dog, pet> two arbitrary elements are “pet” and ”dog” and their common inferior concept is “poodle”. Therefore “poodle” is lower bound and GLB (greatest lower bound) in this example.



As stated above, the ordered set which includes either LUB or GLB, or includes at least one of each within ordered set/partial ordered set is called lattice. Previously all the concept and existence of the universe was defined as subsumption partial ordered set. Also as stated above there are LUB and GLB in concept and existence therefore the universe can be defined as subsumption partial ordered lattice.

Emptiness is the Top of the Subsumption Partial Ordered Lattice Universe

Next, let's look at the two arbitrary concepts or existence of LUB and GLB in the subsumption partial ordered lattice universe. GLB as two arbitrary concept or existence in lattice is called "bottom" and LUB as two arbitrary concept or existence in lattice is called "top".

When selecting two arbitrary elements in the universe for example selecting plastic bottle and dog from the universe what are the most inferior element of the common concept, which is the bottom of the universe of subsumption partial ordered lattice? Modern Analytic Philosophy it can be defined as "contradiction" (or "repugnance") which is just like "plastic bottle which barks bow-wow" and contained a little too much information.

Meditation is the Only Way to Experience the Emptiness

On the other hand two arbitrary LUB of the universe and the top of the universe of subsumption ordered lattice are defined as "plenty existence" which means specific concept does not exist. In fact Modern Analytic Philosophy agrees "superior concept of all existence do not exist". Therefore universe of western Modern Analytic Philosophy is closed with "contradiction" at the bottom and opened with "does not exist" on the top.

Now we utilize Buddhism philosophy of Buddha. Buddhist philosophy considers superior concept of all existence "exists" and this is "emptiness". "Emptiness" in Buddha's philosophy is superior concept of all the existence. Therefore two arbitrary concept of existence of LUB and top of subsumption partial ordered set lattice of universe becomes "emptiness" by employing eastern Buddhist philosophy with western Modern Analytic

Philosophy. Emptiness is the most superior concept in the universe that carries the least amount of information. In this sense we can also say that emptiness potentially includes the whole universe.

As stated above, by integrating western philosophy and eastern philosophy we can define *the universe as subsumption partial ordered lattice of concept and existence which is closed with “contradiction” at the bottom and also is closed with “emptiness” at the top*. Hence we can also define emptiness as “top of the universe of subsumption partial ordered lattice of concept and existence”. Emptiness and dependant arising is two different concepts as described previously.

As I noted, such perspective toward the universe and emptiness now coincides with our knowledge in modern mathematics, physics and philosophy especially after success of incompleteness theorem in mathematics or after the success of quantum physics in the world of physics.

Meditation Practice is the Only Way to Experience Emptiness

It's vital to remember that the above discussion is only the definition of “emptiness”. Understanding definition of emptiness doesn't mean that you understand emptiness. In order to understand emptiness, practicing meditation is the only way.

Predecessors had created various methods of meditation in order to attain emptiness. For example Zhi-yi, the founder of Tientai school invented the meditation methods named Concise Samatha-vipasyana and disseminated the method in his teaching called “Maha-Samatha-vipasyana”. “Maha-Samatha-vipasyana” compiled by this pupil still remains this time provides commentaries about the practice of samatha and vipasyana meditations. In Theravada Buddhism, samatha and vipasyana meditations are practiced separately, however Mahayana Buddhism does both of them at the same time. Mahayana Buddhism tries to attain Buddhishood and experience emptiness by rigorously looking at ego/atman. Then how does it work?

As previously stated, modern analytic philosophy defines concepts and existence by partial function. In the idea of partial function, defining a

part enables to define sub set which is the rest of all part excluding the previously defined part. When defining ego/atman of a certain individual, we divide universe into ego/atman and non-ego/atman. Then the ego/atman of the individual is perfectly defined, universe of non-ego/atman of the individual is successfully defined. This means understanding ego/atman enables us to understand the universe. When you perfectly understand ego/atman and see the whole universe, remove ego/atman in the end. By removing ego/atman from the universe, emptiness will emerge and you can experience emptiness.

Thus such meditation practice to reach emptiness through rigorously looking at ego/atman is still remained in teaching of various Buddhism schools including 12 deeds of Buddha and mid to later stage of Esoteric Buddhism. Apart from this, some method tries to attain emptiness by gradually reducing information amount and “climbing up the steps (levels) of abstraction”

During the last 2600 years after the enlightenment of Buddha, Buddhism has disseminated around the world. Rigorous practice of meditation of predecessor enriched system of Buddhism very well.